

CLAIMS

- Claims 1-8, 13-15, 28 and 29 are currently pending. Claims 1-4 and 13 are currently amended. No new matter has been added.

1. (Currently Amended) An apparatus comprising,
an elongated lubricant vapor source comprising a chamber fluidly communicating with ~~at least~~ a plurality of primary plugs having an interior for supplying lubricant vapor, wherein each of the plurality of primary plugs comprises a drilled hole and two openings for transporting the lubricant vapor; and
wherein the lubricant vapor source comprises a plurality of threaded holes into which the plurality of primary plugs are screwed therein.

2. (Currently Amended) The apparatus according to claim 1, further comprising a chamber having an interior space and wherein the chamber is adapted for maintaining the interior space at a pressure below atmospheric pressure.

3. (Currently Amended) The apparatus according to claim 1, further comprising a substrate loader/unloader and wherein the substrate loader/unloader is adapted for providing cooling/condensation of the lubricant vapor for preventing escape of the lubricant vapor from an interior space of a chamber.

4. (Currently Amended) The apparatus according to claim 3, wherein the substrate loader/unloader is further adapted for supplying and withdrawing at least one disc-shaped substrate having a pair of opposed surfaces and wherein the substrate loader/unloader is further adapted for mounting or gripping at least one disc-shaped substrate.

5. (Previously Presented) The apparatus according to claim 4, wherein the elongated lubricant vapor source has a length greater than an outer diameter of the disc-shaped substrate.

6. (Previously Presented) The apparatus according to claim 1, wherein the elongated lubricant vapor source comprises a closed heated chamber for accommodating liquid lubricant therein and serving as a lubricant vaporizer, the closed heated chamber fluidly communicating with at least the plurality of primary plugs for supplying a stream of lubricant vapor.

7. (Previously Presented) The apparatus according to claim 6, wherein the elongated lubricant vapor source further comprises a plurality of secondary plugs for increased collimation of the stream of lubricant vapor.

8. (Previously Presented) The apparatus according to claim 6, further comprising a spaced-apart plurality of the elongated lubricant vapor sources arranged along a path of transport/conveyance of a disc-shaped substrate within the closed heated chamber.

Claims 9-12 (Canceled)

13. (Currently Amended) The apparatus according to claim 1 further comprising:
a closed heated chamber fluidly communicating with ~~at least~~ the plurality of primary plugs, wherein the closed heated chamber is cylindrically-shaped with circularly-shaped upper and lower ends,

a substrate loader/unloader comprising at least one combined substrate load/unload station on one of the upper and lower ends; and

wherein the lubricant vapor source further comprises a first plurality of radially extending, elongated lubricant vapor sources for depositing a thin film of lubricant on a first surface of a disc-shaped substrate; and

a substrate transporter/conveyor that is adapted to move the disc-shaped substrate in a circular path past each of the primary plugs.

14. (Previously Presented) The apparatus according to claim 13, wherein the first plurality of radially extending, elongated lubricant vapor sources further comprises a second

plurality of radially extending, elongated lubricant vapor sources for depositing a thin film of lubricant on a second surface of the disc-shaped substrate.

15. (Previously Presented) The apparatus according to claim 1 further comprising:

an elongated, rectangular box-shaped chamber having a pair of longitudinally extending front and rear walls,

a substrate loader/unloader comprising a substrate load lock chamber connected to the elongated, rectangular box-shaped chamber at a first end of the front wall and a substrate exit lock chamber connected to the elongated, rectangular box-shaped chamber at a second end of the front wall,

wherein the lubricant vapor source further comprises a plurality of transversely extending, elongated lubricant vapor sources that extend transversely across the front wall in a space between the load lock chamber and the exit lock chamber, and

a substrate transporter/conveyor that is adapted to move a disc-shaped substrate in a linear path past each of the transversely extending, elongated lubricant vapor sources.

16. (Withdrawn) A method of vapor depositing a uniform thickness thin film of lubricant on at least one surface of a disk-shaped substrate, comprising the steps of:

(a) providing an apparatus comprising:

(i) a chamber having an interior space maintained below atmospheric pressure;

(ii) a substrate loader/unloader for supplying said interior space with at least one disk-shaped substrate and for withdrawing at least one disk-shaped substrate from said interior space, said disk-shaped substrate comprising a magnetic or magneto optical data/information storage and retrieval medium;

(iii) at least one lubricant vapor source for supplying said interior space with a stream of lubricant vapor, said vapor source comprising a closed heated chamber fluidly communicating with at least a plurality of primary plugs for supplying a stream of lubricant vapor; and

(iv) a substrate transporter/conveyor for continuously moving at least one substrate past said stream of vapor from said at least one lubricant vapor source;

- (b) supplying said interior space with a substrate having at least one surface;
- (c) continuously moving said substrate past said stream of lubricant vapor and depositing a uniform thickness thin film of said lubricant on said at least one surface; and
- (d) withdrawing the lubricant-coated disk-shaped substrate from said interior space.

17. (Withdrawn) The method as in claim 16, wherein:

step (b) comprises supplying a disc-shaped substrate having a pair of opposed surfaces.

18. (Withdrawn) The method as in claim 17, wherein:

step (b) comprises supplying a disc-shaped substrate having a laminate of layers for a magnetic or magneto-optical (MO) data/information storage and retrieval medium formed on at least one of said pair of opposed surfaces.

19. (Withdrawn) The method as in claim 18, wherein:

step (c) comprises vapor depositing a thin film of a polymeric fluorine-containing lubricant on said laminate of layers on at least one of said pair of opposed surfaces.

20. (Withdrawn) The method as in claim 17, wherein:

step (a)(iii) comprises providing an apparatus with at least one elongated lubricant vapor source having a length greater than an outer diameter of said disc-shaped substrate, said at least one elongated lubricant vapor source comprising a closed heated chamber for accommodating liquid lubricant therein and serving as a lubricant vaporizer, said closed heated chamber fluidly communicating with a plurality of primary plugs for supplying said stream of lubricant vapor.

21. (Withdrawn) The method as in claim 20, wherein:

step (a) comprises providing an apparatus wherein said chamber (i) is in the form of a cylinder with circularly-shaped upper and lower ends; said substrate loader/unloader (ii) comprises at least one combined substrate load/unload station on one of said upper and lower ends; said at least one elongated lubricant vapor source (iii) comprises a first plurality of spaced-apart, radially extending, elongated lubricant vapor sources for depositing a thin film of lubricant

on a first one of said pair of opposed surfaces of said disc-shaped substrate; and said substrate transporter/conveyor (iv) is adapted to move said at least one disc-shaped substrate in a circular path past each of said first plurality of spaced-apart, radially extending, elongated lubricant vapor sources.

22. (Withdrawn) The method as in claim 21, wherein said at least one elongated lubricant vapor source (iii) further comprises a second plurality of spaced-apart, radially extending, elongated lubricant vapor sources for depositing a thin film of lubricant on a second one of said pair of opposed surfaces of said disc-shaped substrate.

23. (Withdrawn) The method as in claim 20, wherein step (a) comprises providing an apparatus wherein said chamber (i) is in the form of an elongated, rectangularly-shaped box having a pair of longitudinally extending front and rear walls; said substrate loader/unloader (ii) comprises a substrate load lock chamber connected to said chamber at a first end of said front wall and a substrate exit lock chamber connected to said chamber at a second end of said front wall; said at least one elongated lubricant vapor source (iii) comprises a plurality of spaced-apart, elongated lubricant vapor sources transversely extending across said front wall in the space between said load lock and said exit chambers; and said substrate transporter/conveyor (iv) is adapted to move said at least one disc-shaped substrate in a linear path past each of the plurality of spaced-apart, transversely extending, elongated lubricant vapor sources.

Claims 24-27 (Canceled)

28. (Previously Presented) The apparatus according to claim 1, wherein the plurality of primary plugs form a pattern in the form of a linear array, a diagonal array, or a rectangular array.

29. (Previously Presented) The apparatus according to claim 1, wherein the plurality of primary plugs positioned at the outer edges of the lubricant vapor source have a smaller diameter

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drilled hole than the plurality of primary plugs positioned adjacent to the middle of the lubricant vapor source.